ENG Div Files

SMALL NAVIGATION PROJECT

NEW HARBOR

MAINE

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DETAILED PROJECT REPORT

(~~ADVANCE DRAFT~~)

U.S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS WALTHAM, MASS.

MARCH 1964

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12-8/64

U. S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM 54, MASS.

ADDRESS REPLY TO
DIVISION ENGINEER

REFER TO FILE NO. NEDED-R

19 March 1964

SUBJECT: Detailed Project Report for Small Navigation Project, New Harbor, Maine

TO: Chief of Engineers
ATTN: ENGCW-PD
Washington, D. C.

1. In accordance with EM 1165-2-107, there is submitted for review and comment an advance draft of the subject report.

2. Responsible officials have indicated the willingness and ability of the Town of Bristol and the State of Maine to meet the requirements of local cooperation. Formal assurances of participation will be obtained from the State and Town during preparation of final designs for the project.

3. The plans and specifications will be prepared in accordance with the Detailed Project Report as approved. Funds in the amount of $10,000 for preparation of the plans and specifications and $106,000 for construction will be required.

4. Formal comments of the State of Maine will be requested after approval of the advance draft.

Incl
as (10 cys)

P. C. HYZER
Brigadier General, USA
Division Engineer

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Maps Accompanying Report:

U. S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
424 Trapelo Road
Waltham, Mass. 02154

NEDED-R 18 March 1964

DETAILED PROJECT REPORT
NEW HARBOR, MAINE

PERTINENT DATA

1. Purpose: Expansion of existing anchorage facilities in New Harbor and Back Cove to reduce crowding of moored craft, reduce delays and permit increased harbor use.

2. Location: New Harbor is located in the Town of Bristol, in Lincoln County, on the west shore of Muscongus Sound, about 25 miles southwest of the City of Rockland.

3. Existing Project: The existing Federal project, authorized by the River and Harbor Act of 1905 and completed in the same year, provides for anchorage areas of about 3 acres, 12 feet deep, in the outer portion of the harbor and about 3-1/2 acres, 6 feet deep, in the inner portion.

4. Improvement Desired: Expansion of existing harbor facilities in New Harbor at a depth of 6 feet and improvement of Back Cove to the same depth to provide an additional 5-acre anchorage space.

5. Recommended Improvement: Extend the existing 6-foot anchorage in New Harbor over an additional 1.4 acres and dredge 2.2 acres of anchorage space, 6 feet deep, in Back Cove.

6. Estimated Costs:

Dredging 3.6 acres of anchorage 6 ft. deep; 33,000 c.y.	$ 89,000
Contingencies @ 15%	13,000
Engineering and Design	11,000
Supervision and Administration	12,000
Construction Total (Jan. 1964)	$125,000

7. Apportionment of First Cost:

Federal:	
Corps of Engineers: 94% of $125,000	$117,000
Coast Guard: Additional Navigation Aids	0
TOTAL Federal	$117,000
Non-Federal:	
Cash Contribution: 6% of $125,000	$ 8,000
Public Landings (self-liquidating)	10,000
TOTAL Non-Federal	$ 18,000

8. Annual Costs:

Federal: Interest and Amortization (50 yrs. @ 3%). (.03887 x $117,000)	$ 4,550
Maintenance: Anchorages	1,000
Navigation Aids	[illegible]
	$ 5,550

8. Annual Costs: (Cont'd)

Non-Federal: Interest & Amortization (50 yrs. @ 3%) (.03887 x $8,000)	$	310
TOTAL	$	5,860

9. Benefits:

	General	Local	Total
Fishing Boats			
Reduction in Storm damage	$ 1,000	0	$ 1,000
Increased lobster catch	11,300	0	11,300
Increased groundfish catch	3,000	0	3,000
Elimination of Tidal delays	1,650	0	1,650
Recreational Craft			
Increase use to existing fleet	290	290	580
Increase use to transient fleet	320	320	640
Attraction of new boats	384	384	768
Attraction of additional transients	240	240	480
TOTAL	$ 18,184	1,234	$ 19,418
	94%	6%	100%

10. Benefit-Cost ratio: $\frac{19418}{5860} = 3.3$

11. Requirements of Local Cooperation:

a. Make cash contribution of 6 percent of construction cost, presently estimated at $8,000.

b. Furnish lands, easements, and rights-of-way for construction and maintenance of the project.

c. Hold and save the United States free from damages which may result from construction and maintenance of the project.

d. Maintain, without cost to the United States, two public landings with adequate access channels and berths 6 feet deep, open to all on equal terms; one in New Harbor and one in Back Cove.

AUTHORITY

12. This Detailed Project Report is submitted pursuant to authority contained in Section 107 of the River and Harbor Act of 1960. An investigation of New Harbor with a view to determining whether the existing project should be modified at this time was initiated under authority of a resolution of the Committee on Public Works of the House of Representatives adopted 3 June 1959. Preliminary results of the study indicated that purpose, scope and cost of further improvement of the harbor best suited to meet the needs of navigation would meet the criteria established under the above general authority. Accordingly, by letter dated 29 November 1963, approval was requested of the Chief of Engineers to continue and complete the study under the general authority. Specific authority to prepare and submit this Detailed Project Report was provided by 1st Indorsement, dated 5 December 1963, from the Chief of Engineers.

PURPOSE AND EXTENT OF STUDY

13. This study considers the need for modification of the existing Federal navigation project at New Harbor. Office and field investigations and engineering and economic studies were made of improvements requested by local interests. A detailed hydrographic survey consisting of soundings and probings was made in December 1961 and January 1962 from which the character and estimated quantities of the bottom materials were determined. A public hearing was held on 13 June 1961 at the Bristol High School in Pemaquid, Maine in order to obtain the views of local interests. A navigation questionnaire has been the basis for substantiating the waterborne commerce and boating

activities of the harbor. Local interests and all interested Federal and State agencies were consulted to obtain their comments on the results of the study.

DESCRIPTION

14. New Harbor is located in the Town of Bristol, Lincoln County, Maine, on the west shore of Muscongus Sound. It is situated on the east side of Pemaquid Neck, about 2.5 miles northeast of Pemaquid Point and 25 miles southwest of the city of Rockland, Maine. It is a small cove about 2,500 feet long and 400 feet wide with depths ranging from 6 to 19 feet in the outer 2,000 feet of the harbor. The remaining area at the head of the harbor is bare at low water. Back Cove is somewhat smaller having a width of 100 to 200 feet, a length of about 1,000 feet and a depth averaging about 2 feet over the inner 600 feet. The outer portion has depth ranging from 5 to 17 feet. The main harbor and Back Cove have a common mouth to Muscongus Sound. The harbor is well protected from all directions except easterly storms. Prevailing winds in the area are southerly in summer and northwesterly in winter. The mean range of tide is 8.9 feet. The locality is shown on Coast and Geodetic Survey Charts No. 313, 1204 and on the maps accompanying this report.

15. Two small streams drain into the harbor from the natural adjacent watershed. One flows generally south and enters at the head of New Harbor, while the other flows east and enters at the head of Back Cove. It does not appear that these two streams would be a problem to navigation in any way. The sediment load of the streams is not measurable at the point of discharge into the harbor.

TRIBUTARY AREA

16. New Harbor is one of seven villages that constitute the Town of Bristol. In 1960, the Town of Bristol had a total population of 1,441 and an assessed property valuation of $8,140,141. Commercial fishing and lobstering are the principal industries of the town. There are two small machine shops that employ less than 5 people. The summer tourist business provides some income to the area. Therefore, the maintenance and growth of the town's economy is dependent on the development of its harbor facilities. There are two other harbors in the Town of Bristol; one at Round Pond and the other at Pemaquid. Neither of these harbors have been improved for navigation by the United States although Round Pond was the subject of an unfavorable survey investigation made in 1959. New Harbor and Round Pond Harbor furnish the only sheltered anchorages on the west of Muscongus Sound.

17. State Highway routes No. 32 and 130 pass through the village of New Harbor, connecting with U.S. Route No. 1 about 17 miles to the north. The nearest railroad connections are in the towns of Newcastle and Damariscotta, 12 miles distant.

BRIDGES

18. There are no bridges crossing that portion of the harbor for which improvements are now being considered. There is a small wooden foot-bridge at the head of Back Cove.

PRIOR REPORTS

19. New Harbor was the subject of an investigation in 1905. The report thereon, published in House Document No. 167, 58th Congress, 2nd Session, is the basis for the existing Federal project adopted in 1905 and completed in the same year. An unpublished preliminary examination in 1935 resulted in maintenance dredging in 1936 which restored project depths.

20. Round Pond, about 5 miles north of New Harbor, was the subject of a recent survey study. Local interests desired a Federal project to provide anchorage for small fishing and recreational craft at Round Pond, partly because of the crowding at New Harbor. This was found to be economically unjustified and an unfavorable report was submitted to Congress in October 1960. Since that time, local interests have as an alternative improved the docks and berths in the harbor of Round Pond.

21. Pemaquid Harbor, 2 miles west of New Harbor and about 7 miles by boat around Pemaquid Neck, has sheltered anchorages with depths of 6 to 10 feet over several acres. A navigation project at Pemaquid Harbor has never been considered by the Federal government.

EXISTING CORPS OF ENGINEERS PROJECT

22. The existing Federal project for the improvement of New Harbor was authorized and completed in 1905. The project provides an anchorage area of about 3 acres, 12 feet deep, in the outer portion of the harbor and an anchorage area of about 3-1/2 acres, 6 feet deep, over the inner portion of the harbor. Federal expenditures to date in connection with the existing project amounted to $23,100, of which $10,500 was expended for improvement and $12,800 for maintenance. A hydrographic survey made in January 1962 indicated that minor shoaling has occurred in the project areas.

LOCAL COOPERATION ON EXISTING PROJECT

23. There were no prescribed conditions of local cooperation in connection with the existing Federal project.

OTHER IMPROVEMENTS

24. No improvements for the benefit of general navigation have been made by local interests. The Town of New Harbor has ownership of property at the head of New Harbor proper and Back Cove for the development of public landings.

TERMINAL AND TRANSFER FACILITIES

25. The harbor facilities consist of about 20 privately-owned small wooden sheds on or adjacent to timber piers projecting out to mean low water or to the existing Federal project. The great majority of these structures are located on the north side of the harbor. At low tide, there are mud flats around some of these piers with elevations ranging from 1 to 5 feet above mean low water. In addition, there are four piers with sheds on the north side of Back Cove that are in use when tides permit.

26. The present harbor facilities are adequate to handle existing and prospective commerce. Gasoline and water are available at the existing Federal project site. There are no local boat yards. The blockings used for grounding small boats are also used to support these boats when making minor repairs. The nearest marine railway is at South Bristol about 10 miles southwest of New Harbor.

27. At the present time, the harbor has no public landing, although two landing sites with access roads are owned by the town. One is located at the head of New Harbor, while the other is at the head of Back Cove.

IMPROVEMENT DESIRED

28. A hearing was held on 13 June 1961 at the Bristol High School, Pemaquid, Maine. Local interests expressed their desires at that time concerning the improvement of New Harbor. These consisted of expanding the existing 6-foot anchorage to the head and sides of the main harbor and dredging Back Cove to a depth of 6 feet.

29. The possibility of a breakwater at the mouth of the harbor to provide protected anchorage was discussed. It was the consensus of opinion among the local fishermen that this was not desired. Whereas the harbor is now ice free during the winter months, it was feared that a breakwater would prevent any ice formation from going out with the tide and would result in an ice-locked harbor.

30. The State of Maine Department of Sea and Shore fisheries summarized in general the present harbor conditions and fifficulties and also furnished statistics concerning the fishing industry in the harbor and the present harbor use by vessels. The major problem to the fishing industry which hampers the efficient operations of the present fleet and hinders its growth is the lack of sufficient anchorage area in the harbor. The need for expansion of harbor facilities was affirmed in a report furnished by the U.S. Fish and Wildlife Service. Emphasis was placed by officials at both State and local levels on the importance of adequate harbor facilities to maintain and promote the development of the Town's economy.

EXISTING AND PROSPECTIVE COMMERCE

31. The only year-round industry at New Harbor is commercial fishing. There are three lobster dealers located at New Harbor, one of which also handles groundfish. A small retail business in fresh fish is carried on in the area.

32. There are no published commercial statistics for New Harbor. The following data was obtained from reports furnished by the U.S. Fish and Wildlife Service, the State of Maine Department of Sea and Shore Fisheries and local interests. There are 61 licensed lobstermen located in New Harbor. During 1960, local boats brought in 406,000 lbs. of lobster to New Harbor dealers, and an additional 20,000 lbs. were sold there by lobstermen from other ports. The ex-vessel value of the lobsters landed at New Harbor amounts to $191,700. Local interests report that close to 389,000 pounds of ground fish were landed by New Harbor trawlers during 1960, having an ex-vessel value of $29,200. These fish were purchased by local dealers and shipped by truck to Boston markets. Local fishermen have indicated that the above statistics for 1960 would be an average for the past 5 years.

33. In addition, fishermen caught 3,750,000 lbs. of herring valued at about $56,200. Of this total, about 800,000 lbs. were caught within New Harbor itself. An additional 130,000 lbs. of whiting, with a value of about $2,000, were also caught by local boats. Neither the

herring nor the whiting were landed at New Harbor, but these fish do represent a part of the production of the local fleet.

34. As noted in the U.S. Fish and Wildlife Service report dated 18 July 1963 (see Appendix A) the lobster catch is substantially the same as indicated by local interests, while the groundfish actually landed is somewhat higher (389,000 lbs. to 486,250 lbs.). This is due to fishermen landing their catch at the most convenient location during the winter months.

35. The U.S. Fish and Wildlife Service anticipate a 15% increase in lobster landings at New Harbor if navigation improvements are accomplished. They believe that this increase could be realized through provision of anchorage space for 7 additional lobster boats and one additional trawler.

36. At the present time there are 10 fishermen living at New Harbor who moor their boats and operate from Pemaquid Beach due to the crowded conditions in New Harbor. Local interests feel that if adequate anchorage space were provided, these fishermen would return their boats to New Harbor to eliminate the inconvenience and the expense of extra time and travel. Local interests also anticipate 13 additional boats fishing from New Harbor within the next 2 years.

VESSEL TRAFFIC

37. The present locally based fishing fleet consists of 45 lobster boats and 4 trawlers ranging from 30 to 48 feet, and valued at $135,000 and $49,500 respectively. In addition, there is a permanently based recreational fleet of 55 boats (includes 45 rowboats and outboards) valued at $57,800.

38. It is estimated that the lobster boats each make about 150 trips annually. These trips range from 1 to 2 days in duration. The trawlers make about 150 trips of from 2 to 5 days duration throughout the year. The harbor enjoys ice-free conditions and the only time these boats remain idle is on Sundays, or when laid up for repairs or because of bad weather.

39. In the winter of 1960-61, 18 lobster boats from the harbors of Round Pond and Friendship operated from New Harbor due to the heavy ice conditions in their own ports. The fishermen from the islands of Muscongus and Monhegan also use the harbor to a great extent for the purpose of cleaning, painting and making repairs to their boats. Due to its central location in relation to the fishing grounds, New Harbor is a port of call for many sardine carriers, trawlers and seiners. An estimated 175 of these used the mooring and dock facilities during the year. These transient fishing craft vary in length from 30 to 65 feet.

40. The transient recreational fleet consists of about 300 small sail craft and cruisers that moor in the harbor during the summer months on an average of one night. Many others enter, but because of the congestion within the harbor, immediately depart.

DIFFICULTIES ATTENDING NAVIGATION

41. The difficulties attending navigation in New Harbor are those associated with lack of water at low tide in the anchorage basin and the need to crowd into the deeper areas.

Local interests state that at present some of the boats moored in the harbor ground out at low water. This results in fishing delays of from 2 to 3 hours. Boats are reported to be damaged frequently because of the over-crowded conditions existing in the anchorage. This not only results in a fnanacial loss but also in additional fishing time lost while the boats are being repaired. At present, too, it is often difficult to get near the boats at their moorings during low water, and much time is wasted in carrying gear over the flats.

WATERPOWER AND OTHER SPECIAL SUBJECTS

42. The waterway under consideration is tidal. There is no problem involved in this study pertaining to water power, flood control, pollution or related subjects. The U.S. Fish and Wildlife Service has indicated that dredging the anchorage would have no adverse effect on fish or wildlife nor would the deposition of spoil should it be deposited on land adjacent to the harbor or on a designated dumping ground at sea. The comments and recommendations of the Fish and Wildlife Service are discussed under Coordination with Other Agencies and the full text of their report is given in Appendix A.

PLAN OF IMPROVEMENT

43. Present anchorage facilities provided by the existing project amount to about 6.5 acres. Allowing a fairway for boats to enter or leave, effective anchorage space is reduced to 5.5 acres. With the present fleet, this amounts to a saturation of 12 boats per acre, which indicates the need for additional anchorage space.

Two plans of improvement have been considered in this report. The first, known as the "Desired Plan", advocated by local interests, considers the possibility of expanding the existing Federal project at the head and along the south side of the harbor, including Back Cove, by dredging to a depth of 6 feet. Allowing for adequate clearance around the harbor for existing and probable pier construction and the necessary attendant berthing space, the remaining area in New Harbor susceptible to improvement as anchorage amounts to about 2.5 acres and the area in Back Cove amounts to 2.2 acres for a total of about 4.7 acres. These areas are about equivalent to the total area requested for improvement at the public hearing.

44. Based on the results of the hydrographic and probing survey made in January 1962, a substantial amount of rock was found to be present in certain areas within the harbor as shown on the attached map. In view of the high cost involved in the removal of rock an alternate or "Proposed Plan" was developed avoiding those rock areas, yet providing 3.6 acres of additional anchorage 6 feet deep.

45. Both plans would relieve present overcrowding in the harbor, would provide more maneuvering space and would permit the present fishing fleet to expand by at least 8 additional boats, and for limited expansion of the recreational fleet. The "Proposed Plan" will meet the desires of local interests and does so at about 1/2 the cost of the "Desired Plan".

SHORELINE CHANGES

46. The existing shores of the harbor are composed of bedrock and boulders fronted by mud flats at low tide. Enlargement of the existing anchorage area of New Harbor would have no adverse effect on the configuration of the adjacent shore line.

REQUIRED AIDS TO NAVIGATION

47. The Coast Guard has been consulted and reports that no additional aids to navigation would be required due to the improvement.

48. Estimates of First Cost. Estimates of first costs have been prepared for two plans of improvement: The Desired Improvement; providing approximately 4.7 acres of additional anchorage, 6 feet deep in New Harbor and Back Cove, which is the maximum area possible due to the limited harbor area available, and the Proposed Improvement; providing approximately 3.6 acres of additional anchorage, 6 feet deep.

49. Estimates of first cost for the two plans considered, based on price levels of January 1964, including an allowance for contingencies, are detailed in Appendix C. A summary of the estimates of first cost for each item of the two improvements are as follows:

A. Desired Plan:

		Estimated Cost (Jan. 1964)
Dredging 4.7 acres of anchorage, 6 ft. deep		$200,000
Engineering and Design		11,000
Supervision & Administration		19,000
TOTAL COST (Corps of Engineers Funds & Non-Federal Contributions)		$230,000
TOTAL NON-FEDERAL COSTS		
Cash Contribution	$16,000	
Public Landings	10,000	
		$ 26,000

Summary of Estimated Costs

Federal

Corps of Engineers (Statutory limit)	$ 200,000
U.S. Coast Guard	0
Total Estimated Federal Cost	$ 200,000

Non-Federal

Cash Contribution	$ 16,000
Costs in excess of Federal limit	14,000
Public landings (2)	10,000
Total Estimated Non-Federal Cost	$ 40,000

B. Proposed Plan

	Estimated Cost (Jan. 1964)
Dredging 3.6 acres of anchorage, 6 ft. deep	$ 102,000
Engineering and Design	11,000
Supervision and Administration	12,000
TOTAL COST (Corps of Engineers Funds and Non-Federal contributions)	$ 125,000

TOTAL NON-FEDERAL COSTS

Cash Contribution	$ 8,000	
Public Landings	10,000	
		$ 18,000

Summary of Estimated Cost

Federal

Corps of Engineers		$ 117,000
U.S. Coast Guard		0
Total Estimated Federal Cost		$ 117,000

Non-Federal

Cash Contribution	$ 8,000	
Public Landings	10,000	
		$ 18,000

ESTIMATE OF BENEFITS

50. Benefits to be derived from improvement of New Harbor by providing additional anchorage 6 feet deep will be primarily general and to a minor degree recreational. General benefits will accrue from the reduction in storm damage to fishing vessels, a 15% increase in fish landings due to increased use of the existing fishing fleet and additions to the fleet as a result of the improvement. Recreational benefits are considered to be equally general and local in nature. They would be realized by increased use of the harbor by the present local and transient fleets, and the additions to these fleets as a result of the improvement.

51. The general benefits to be derived from either plan of improvement attendant to the fishing interests will consist of reduction in boat damages, the attraction of an additional 7 lobster boats to the existing lobster fleet, also, one additional trawler to the groundfish fleet, and the elimination of tidal delays to those lobster boats that now ground out at low water.

52. The U.S. Fish and Wildlife Service in its report dated 18 July 1963 finds that as a result of the improvement, there would be an increased catch of lobster and groundfish by 8 additional home-based fishing boats (7 lobster, 1 trawler). This increased catch is limited by the natural supply, which would limit the number of boats

that could be added to the existing fishing fleet. It is estimated that about a 15% increase could be made in lobster landings at New Harbor. At an average annual per vessel catch of 9,022 lbs. of lobsters, this increase (63,200 lbs.) could be realized if anchorage space is provided for seven additional boats. At an average value of $0.45 per pound, the increased annual landings represent a total value of $28,400. The benefit is estimated at 40 percent of the gross value of the added catch, or $11,300.

In addition to an increase in lobster landing, it is estimated that ground fishing will support one additional trawler. Present groundfish landings amount to an average of 486,250 lbs. annually having a total value of $36,500. Anchorage areas provided under the existing project are used by the existing trawler fleet. It is not considered that this fleet will benefit significantly through expansion of the 6-foot anchorage area. With other areas available for lobster boats now anchored in the existing deeper anchorage, it is considered that an additional trawler would be attracted and supported by the groundfish resource. One additional trawler would increase the landings by 97,250 lbs. per year, worth $7,300. The benefit is estimated at 40 percent of the gross value of this added catch or $3,000. Navigation improvements would not result in any increase in herring or whiting landings.

53. Additional benefits would accrue from the proposed improvement of New Harbor due to elimination of tidal delays to moored lobster boats that ground out at low water. It is estimated that this delay amounts to 2 hours and occurs 10% of the time to 50% of the existing lobster fleet (45 boats). These vessels make 150 trips/yr. It is estimated that the vessel operating cost is $2.50/hr. On the basis of the above figures, 22 boats times 14 trips, at $2.50 per hour, for 2 hours yield a net benefit of $1,650. This value includes time lost carrying gear over flats to grounded vessels.

54. Local interests estimated that about $2,000 in boat damage occurs within the harbor each year. This damage is primarily caused by boats dragging on the harbor bottom and collisions with other boats due to the excessive congestion in the harbor. It is believed that their estimate of $2,000 in boat damage each year is overstated. It is estimated that 20 boats experience $50 worth of damage each year for a total of $1,000, which would be prevented as a result of the improvement. Little or no damage has been experienced by the existing recreational fleet of 10 boats. No direct benefits would be realized by the 3 transient charter boats presently using New Harbor.

55. Benefits from increased recreational boating have been evaluated as the gain in annual return which the owner of the craft would enjoy, if the harbor is improved. The annual net return to the owners has been taken as the amount the owners would receive if they chartered to others. This amount is expressed as a percentage of the current market value of the boat. The increase in value to the owner is the difference between the value received by the owner under present conditions and with the increased use made possible by the improvement.

56. Increased use of the harbor would be a primary benefit occurring from the additional anchorage area. The Desired Plan would provide 4.7 acres of additional anchorage 6 feet deep. The Proposed Plan would provide 3.6 acres. The present boating season, about 80 days long, extends from about the 20th of June to the 10th of September.

57. The existing locally-based recreational fleet consists of 55 boats, made up of 20 rowboats, 25 outboards, 5 cruisers and 5 auxiliary sails. It is considered that no benefits would be realized by the 45 rowboats and outboards as a result of this improvement since the existing depths in the areas proposed to be improved and areas adjacent to them are adequate for these shallow draft vessels. Benefits of increased use by the remaining 10 boats have been computed as permitting full unrestricted use of the harbor. The benefits will amount to $580 annually, of which $290 is considered general, and $290 local. A detailed evaluation of the benefits is shown in Table No. I.

58. It was reported that there are about 300 recreational boats presently visiting the harbor annually with an average stay in the harbor of about 1 day. For the 80-day transient boat season, this will amount to 300 boat days or the equivalent of 4 permanently-based boats. The benefits will amount to $640 of which $320 is considered general and $320 local. Benefits of these boats are detailed in Table II.

59. Local interests predicted that there would be a small increase in the recreational fleet immediately after improvement. The existing project provides about 5-1/2 acres of effective anchorage area for the present fleet of 67 fishing and recreational craft producing a saturation of 12 boats per acre. Under either plan, the number of fishing craft that are anticipated to be added to the fleet is considered to be limited by the availability of the natural resources. Therefore, a comparison of benefit for each plan would be measured by the increase in the recreational fleet that would be attracted due to availability of additional anchorage space.

NEW HARBOR

TABLE I BENEFITS TO RECREATIONAL BOATING
EXISTING FLEET

TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE AVERAGE $	DEPRECIATED VALUE TOTAL $	PERCENT RETURN IDEAL	PERCENT RETURN % OF IDEAL Pres.	PERCENT RETURN % OF IDEAL Future	PERCENT RETURN GAIN	VALUE $	ON CRUISE 80 Day Season AVG DAYS	ON CRUISE 80 Day Season % OF SEASON	ON CRUISE 80 Day Season VALUE $	DAMAGES ELIMINATED AVG. EXP R. $	DAMAGES ELIMINATED AVG. ELIM. %	DAMAGES ELIMINATED TOTAL VALUE $
RECREATIONAL FLEET															
Outboards	10-20	25	NO BENEFITS												
Row Boats		20													
Inboards	10-20														
Cruisers	15-30 31-50 51-60	5	8,000	40,000	8	70	95	2	800	32	40	320	-	-	-
Aux. Sail	15-30 31-40 41-60	5	1,000	5,000	8	70	95	2	100	-	-	-	-	-	-
~~Sailboats~~	10-20 21-30 31-40 41-60														
CHARTER BOATS															
Cruisers	21-35 36-50 51-100														
TOTALS		55		$45,000					$900			$320			

TOTAL BENEFITS = 900 - 320 = $580 ANNUALLY

TABLE II BENEFITS TO RECREATIONAL BOATING
EXISTING TRANSIENT FLEET

TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE AVERAGE $	DEPRECIATED VALUE TOTAL $	PERCENT RETURN IDEAL	% OF IDEAL Pres.	% OF IDEAL Future	GAIN	VALUE $	ON CRUISE AVG DAYS	ON CRUISE % OF SEASON	ON CRUISE VALUE $	DAMAGES ELIM. AVG EXPER.	DAMAGES ELIM. AVG. ELIM.	DAMAGES ELIM. TOTAL VALUE $
RECREATIONAL FLEET															
Outboards	10-20														
Inboards	10-20														
Cruisers	15-30 31-50 51-60	2	8,000	16,000	8	70	95	2	320	-	-	-	-	-	-
Aux. Sail	15-30 31-40 41-60	2	8,000	16,000	8	70	95	2	320	-	-	-	-	-	-
Sailboats	10-20 21-30 31-40 41-60														
CHARTER BOATS															
Cruisers	21-35 36-50 51-100														
TOTALS		4		$ 32,000					$ 640						

TOTAL BENEFITS $640. ANNUALLY

60. With improvement, it was estimated that the fishing fleet of 49 boats would increase by 8 boats and the recreational fleet of 10, exclusive of outboards and rowboats, would increase by 2 and the attracted transient fleet by an equivalent of 3 permanently-based boats for a total fleet of 72 vessels for the "Proposed Plan". The availability of about 9 acres of anchorage space would result in a saturation of 8 boats per acre, a substantial reduction from present conditions. In view of the additional acre of space that would be provided under the "Desired Plan", and to maintain the same saturation as the "Proposed Plan", an additional 8 boats could be accommodated and expected to materialize if the space was provided. These 8 boats would consist of 2 new boats and transient craft equivalent to 6 permanently-based boats. The "Desired Plan" in combination with the existing project would provide 10 acres of anchorage space and would benefit a total fleet of 80 boats.

61. It is estimated that under the "Desired Plan" the benefits accruing to recreational boats due to the attraction of 4 new boats and attracted transient vessels equivalent to 9 permanently-based boats would amount to $918 and $865 respectively for a total estimated benefit of $1783. These benefits would be equally divided as general and local benefits of $892 each. The evaluation of these benefits is shown in Table III.

62. The "Proposed Plan" would permit increase of the recreational fleet by an additional 3 attracted transient and 2 new boats immediately after the improvement. Benefits from this plan, for the additional attracted transient fleet, will amount to $480, of which $240 is considered general and $240 local. Benefits due to the 2 new permanently-based boats will amount to $730, of which $365 is general and $365 local. Benefits from the "Proposed Plan" accruing to these boats are detailed in Tabel IV.

63. A summary of the benefits evaluated for each plan is as follows:

NEW HARBOR
"DESIRED PLAN"

TABLE III BENEFITS TO RECREATIONAL BOATING

Type of Craft	Length (feet)	No. of Boats	Depreciated Value Average $	Depreciated Value Total $	Percent Return Ideal	% of Ideal Pres.	% of Ideal Future	Gain	Value $	On Cruise Avg Days	On Cruise % of Season	On Cruise Value $
NEW BOATS												
Cruisers	15-30	1	1,000	1,000	9	0	95	8.6	86	32	40	36
	31-50	1	8,000	8,000	8	0	95	7.6	608	32	40	243
Aux.Sail	15-30	1	2,000	2,000	9	0	95	8.6	172	16	20	34
	31-40	1	8,000	8,000	8	0	95	7.6	608	32	40	243
	41-60											
TOTAL		4	$19,000						$1,474			$556

ANNUAL BENEFITS $1474-$556=$918

ADDITIONAL ATTRACTED TRANSIENT BOATS

Cruisers	31-50	2	8,000	16,000	8	70	95	2.0	320
Aux. Sail	15-30	5	2,000	10,000	9	70	95	2.25	225
	31-40	2	8,000	16,000	8	70	95	2.0	320
	41-60								
TOTAL		9	$42,000						$865

ANNUAL BENEFITS = $865

NEW HARBOR
"PROPOSED PLAN"

TABLE IV BENEFITS TO RECREATIONAL BOATING

Type of Craft	Length (feet)	No. of Boats	Depreciated Value Average $	Depreciated Value Total $	Percent Return Ideal	% of Ideal Pres.	% of Ideal Ftr.	Gain	Value $	On Cruise Avg Days	On Cruise % of Season	On Cruise Value $
RECREATIONAL FLEET				NEW BOATS								
Cruisers	31-50	1	8,000	8,000	8	0	95	7.6	608	32	40	243
Aux. Sail	31-40	1	8,000	8,000	8	0	95	7.6	608	32	40	243
TOTALS		2	$ 16,000						$1,216			$ 486
			TOTAL BENEFITS $1,216 - $486 = $730 ANNUALLY									
			ADDITIONAL ATTRACTED TRANSIENT BOATS									
Cruisers	31-50	2	8,000	16,000	8	70	95	2	320			
Aux. Sail	15-30 31-40	1	8,000	8,000	8	70	95	2	160			
TOTALS		3		$34,000					$480			
			TOTAL BENEFITS $480 ANNUALLY									

A. Desired Plan:

Source	General $	Local $	Total $
Fishing Boats:			
Reduction in Storm Damage	1,000		1,000
Increased Lobster Catch	11,300		11,300
Increased Groundfish Catch	3,000		3,000
Elimination of Tidal Delays	1,650		1,650
Recreational Boats:			
Existing Fleet (10)	290	290	580
Transient Fleet (4) (Presently Visiting)	320	320	640
New Boats (4)	459	459	918
Attracted Transient Boats (9)	432	433	865
Totals	$18,451 92%	$1,502 8%	$19,953 100%

B. Proposed Plan:

Source			
Fishing Boats:			
Reduction in Storm Damage	1,000	0	1,000
Increased Lobster Catch	11,300	0	11,300
Increased Groundfish Catch	3,000	0	3,000
Tidal Delays	1,650	0	1,650
Recreational Boats:			
Existing Fleet (10)	290	290	580
Transient Fleet (4) (Presently Visiting)	320	320	640
New Boats (2)	365	365	730
Attracted Transient Boats (3)	240	240	480
Totals	$18,165 94%	$1,215 6%	$19,380 100%

APPORTIONMENT OF COSTS AMONG INTERESTS

64. The first costs of construction of each plan have been apportioned between the Federal Government and local interests in proportion to the general and local benefits. The apportionment of costs is as follows:

A. Desired Plan:

FEDERAL:

Corps of Engineers: 92% of $230,000	$ 211,000
Coast Guard: Additional Navigation Aids	0
TOTAL FEDERAL	$ 211,000
Federal Statutory Limitation	$ 200,000
Cost in Excess of Federal Limit	$ 11,000

NON-FEDERAL:

Cash Contribution: 8% of $230,000	$ 19,000
Cost in Excess of Federal Limit	11,000
Public Landings (2)	10,000
TOTAL NON-FEDERAL	$ 40,000

B. Proposed Plan:

FEDERAL:

Corps of Engineers: 94% of $125,000	$ 117,000
Coast Guard: Additional Navigation Aids	0
TOTAL FEDERAL	$ 117,000

NON-FEDERAL:

Cash Contribution: 6% x $125,000	$ 8,000
Public Landings (2)	10,000
TOTAL NON-FEDERAL	$ 18,000

ESTIMATE OF ANNUAL CHARGES

65. Annual charges for the improvement have been estimated on the basis of 50-year project life with Federal and non-Federal interest rates of 3 percent. Additional average annual maintenance charges are based on past experience with the existing project. Based on past record, the average rate of shoaling amounted to 500 cubic yards per year. The proposed improvement contemplates dredging in shallow flats adjacent to the existing project and will increase the dredged areas by about 35%. Due to natural lowering of slopes over a period of years subsequent to improvement, it is estimated the initial shoaling rate will be high but will reduce as the slopes stabilize. The sediment load of the small streams discharging into the harbor are considered to be negligible. The average annual rate of shoaling therefore is estimated to be an additional 500 cubic yards per year resulting in an additional average annual maintenance cost of about $1,000. The non-Federal costs of providing the public landings are considered to be self-liquidating.

66. The average annual charges for both the Desired and Proposed Plans are computed as follows:

A. Desired Plan:

Federal Investment		
Corps of Engineers (Limit)	$	200,000
Coast Guard		0
TOTAL FEDERAL	$	200,000
Non-Federal Investment		
Cash Contribution	$	30,000
Federal Annual Charges		
Interest & Amortization (0.03887) ($200,000)	$	7,800
Maintenance: Channel		1,000
TOTAL	$	8,800
Non-Federal Annual Charges		
Interest & Amortization (0.03887) ($30,000)	$	1,170
TOTAL ANNUAL CHARGES	$	9,970

B. Proposed Plan:

Federal Investment	
Corps of Engineers	$ 117,000
Coast Guard	0
TOTAL FEDERAL	$ 117,000
Non-Federal Investment	
Cash Contribution	$ 8,000
Federal Annual Charges	
Interest & Amortization	
(0.03887)($112,000)	$ 4,550
Maintenance: Channel	1,000
TOTAL	$ 5,550
Non-Federal Annual Charges	
Interest & Amortization	
(0.03887)($8,000)	$ 310
TOTAL ANNUAL CHARGES	$ 5,860

COMPARISON OF BENEFITS AND COSTS

67. A comparison of evaluated benefit and costs for each plan is tabulated as follows:

	Desired Plan	Proposed Plan
Total Project Cost	$ 230,000	$ ~~120,000~~ 125,000
Total Annual Charges	9,970	5,860
Total Benefits	19,953	19,380
Benefit-Cost Ratio	2.0	3.3

68. The recreational benefits for the two plans of improvement are substantially the same, with the exception of an additional 2 new and 6 attracted transient boats to be added to the existing fleet under the "Desired Plan" over and above that which is being provided by the "Proposed Plan".

69. When comparing these two plans of improvement, it was determined that both show a favorable B/C ratio but the "Desired Plan", although offering one more acre of anchorage than the "Proposed Plan", does so at a marked increase in cost. The incremental increase in benefits in the amount of $583 and the incremental increase in annual charges of $4,310 of the "Desired Plan" over the "Proposed Plan" dictates the conclusion that the "Proposed Plan" is the more economical and feasible plan.

PROPOSED LOCAL COOPERATION

70. Construction of the improvements considered in this report will require shore access for contractor's equipment and range markers. In view of the material to be removed, which will require use of a bucket or dipper dredge, and the lack of suitable spoil disposal areas on lands within economic distances from the work areas, it is considered that spoil disposal areas would not be required. Local interests will be required to provide without cost to the United States all lands, easements, and rights-of-way required for construction of the project upon the request of the Chief of Engineers. Local interests should further be required to hold and save the United States free from damages due to the construction work and subsequent maintenance of the project.

71. For projects of improvement for the benefit of small fishing and recreational craft, it is usual to require that a public landing open to all on equal terms be provided. Since Back Cove is proposed to be improved as well as New Harbor, local interests should be required to provide and maintain a public landing at each location, open to all on equal terms, during the life of the project. The town presently owns suitably placed sites for a public landing at each location. The two landings are estimated to cost about $10,000.

72. The benefits to be derived from improvement of New Harbor are partly general and partly local in nature. In the case of the "Proposed Plan" of improvement, the local benefits are estimated as 6% of the total benefits. It is considered that local interests should share in the project costs commensurate with local benefits. It appears equitable to require local interests to make a cash contribution of 6% of the construction cost of the 3.6 acres of additional anchorage provided by the "Proposed Plan" of Improvement. The local cash contribution is presently estimated at $8,000. Local interests have been

consulted and have provided reasonable assurances that the above described requirements of local cooperation would be met.

COORDINATION WITH OTHER AGENCIES

73. All Federal, State and local agencies having interests in the development and use of waterways were notified of the public hearing held in Pemaquid, Maine, on 13 June 1961. All agencies that expressed an interest in the harbor were in favor of improvement of the harbor. Officials of the State of Maine, the town of Bristol, fishing interests, were consulted during the study concerning the effects of the proposed improvements on their activities. They concurred with the plan of improvement. Comments of local and State interests are contained in Appendix B.

74. The United States Coast Guard was advised of the improvement under consideration and was requested to comment on aspects pertaining to their interest. By letter of 19 November 1963, the Commander of the First Coast Guard District advised that no additional navigation aid would be required for the improvement being considered. The Regional Office of the United States Fish and Wildlife Service was also required to comment on the results of this improvement. Their report is contained in Appendix A.

SCHEDULE FOR DESIGN AND CONSTRUCTION

75. It is estimated that preparation of contract plans and specifications will require 5 months. The estimated cost of Engineering and Design is $11,000, of which $1,000 has been allocated and expended for the Detailed Project study. Construction of the project can be accomplished under a single contract in 2 months. Expenditures for the proposed project are as follows:

a. Allocated to date	
Detailed Project Report	$ 1,000
b. Required to Complete	
Plans & Specifications	10,000
Construction, Engineering during construction, Supervision & Administration	114,000*
	$ 125,000
*Including local cash contribution of $8,000	
c. Total Project Cost	
Federal	$ 117,000
Non-Federal (cash contribution)	8,000
	$ 125,000

OPERATION AND MAINTENANCE

76. Maintenance of the project will be the responsibility of the United States. It is estimated that periodic dredging will be required every 10 years. The average annual cost of maintenance for the additional improvement is estimated at $1,000.

CONCLUSION

77. The existing anchorage facilities are insufficient for the present fishing fleet and transient fishing and recreational craft. Under present condition, vessels are obliged to moor in the shallow unimproved areas with the risk of grounding out at low water. In view of the present limited space in the harbor with adequate depths, the growth or expansion of the fishing fleet and the recreational use of the harbor is inhibited.

78. Local interests requested consideration for expansion of anchorage facilities to the extent possible both in New Harbor and Back Cove, which in this case amounted to a maximum of 4.7 acres. Engineering and economic studies indicated that an improvement of this magnitude is justified. However, in view of the presence of ledge rock in certain areas, it was determined that one acre of anchorage in New Harbor proper would be provided at a cost in excess of $100,000, over a plan of improvement providing 3.6 acres. The incremental benefits that would accrue due to the availability of additional acre of anchorage were determined to be insufficient to justify its cost. It is, therefore, concluded that additional improvement of New Harbor is warranted and that the needs of present and prospective commercial and recreational navigation at New Harbor can be satisfied by provision of additional anchorage area of about 3.6 acres, 6 feet deep.

79. Local interests were consulted on the results of the study and concur in the above conclusions.

RECOMMENDATIONS

80. The Division Engineer recommends that further Federal improvement of New Harbor, Maine, be authorized by the Chief of Engineers under provisions of Section 107 of the River and Harbor Act of 1960 to provide 3.6 acres of anchorage area, 6 feet deep, in addition to that presently provided under the existing authorized Federal project. The total estimated cost of the recommended improvement is $125,000. Annual maintenance cost is estimated at $1,000 in addition to that required for the existing project. The recommendation is made subject to the condition that local interests:

a. Make cash contribution of 6 percent of construction presently estimated at $8,000.

b. Furnish lands, easements, and rights-of-way needed for construction and maintenance of the project.

c. Hold and save the United States free from damages which may result from construction and maintenance of the project.

d. Provide and maintain without cost to the United States, two public landings with adequate access channels and berths 6 feet deep, open to all on equal terms, one in New Harbor and one in Back Cove.

Incls.
2 Maps

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
59 Temple Place
Boston 11, Massachusetts

July 18, 1963

Division Engineer
New England Division
U. S. Army Corps of Engineers
424 Trapelo Road
Waltham 54, Massachusetts

Dear Sir:

This constitutes our conservation and development report on the navigation improvement studies at New Harbor, Maine, which you have initiated under the authority of House Resolution (Committee on Public Works) approved June 3, 1959. It was prepared under authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). We have coordinated our studies with the Maine Department of Sea and Shore Fisheries. They have indicated that in their opinion there may be a greater increase in the local fishing fleet than we have reported.

Improvements requested by local interests include dredging an anchorage area to six feet at mean low water at the head and along the southern side of New Harbor and dredging an access channel 50 feet wide and an anchorage area 6 feet deep in Back Cove. The term "New Harbor" as used hereafter in this report can be considered to include Back Cove unless otherwise designated.

It is anticipated that a 15% increase could be made in lobster landings at New Harbor if navigation improvements are made. At an average annual per-vessel catch of 9,022 lbs. of lobsters, this increase (63,900 lbs.) could be realized if anchorage space is provided for seven additional boats. At an average value of 45 cents per pound the increased annual landings represent a total ex-vessel value of $28,400.

In addition to an increase in lobster landings, it is expected that the ground fishery will support one additional trawler. Present groundfish landings amount to an average of 486,250 pounds annually, having an ex-vessel value of $36,500. One additional trawler would increase the landings by 97,250 pounds per year, worth $7,300.

Navigation improvements would not result in an increase in herring or whiting landings, although indirect benefits would result through increased efficiency during in-port stays and through a reduction in tidal delays. There could be a slight increase in the catch of herring in New Harbor because of a possible redistribution of moored boats which may leave more clearance at the harbor entrance where the fishing is done.

There will be possible savings or reduction in operating costs which would result from decreased tidal delays, lessened congestion and boat damage, and improved unloading opportunities. Indirect benefits from harbor improvement include possible construction of a freezer plant, and public landing facilities in both New Harbor and Back Cove. While we cannot assign a dollar figure to these associated benefits, it is important to note that maintenance of the commercial fishery in the national interest depends upon an adequate incentive for apprentice fishermen. Recruitment of apprentice fishermen and capital investment in marine equipment depend, in part, upon having adequate facilities.

Navigation improvements would provide some incidental benefits to the sport fishery through the provision of minimal anchorages for sport-fishing boats using the anchorage when not used by commercial craft.

It is recommended--

1. That anchorage space be provided for at least seven additional lobster boats and one trawler.

No further studies will be required by the Service unless your plan of improvement is changed significantly.

Sincerely yours,

E. E. Crawford
Acting Regional Director
Bureau of Sport Fisheries
and Wildlife

Russell T. Norris
Acting Regional Director
Bureau of Commercial Fisheries

APPENDIX B

Town of Bristol, Maine

(INCORPORATED JUNE 18, 1765)

PEMAQUID, MAINE

November 16, 1963

Division Engineer
U.S. Army Corp of Engineers
424 Trapelo Road
Waltham 54, Mass.

RE: File no. NEDGW

Dear Sir:

I am in receipt of your letter in regard to the proposed dredging at New Harbor, Town of Bristol, Maine.

It is my opinon that the proposed improvements would satisfactorily meet the needs of local interests. I can state that at this time the Selectmen of Bristol are in full accord with the project.

A definite commitment will naturally have to come from the voters of the town at our annual town meeting in March, 1964. If an earlier commitment is necessary, a special town meeting could be called before that time.

Would you kindly advise me in this matter.

Sincerely yours,

Edward R. Lewis
First Selectman, Town of Bristol

APPENDIX B

MAINE PORT AUTHORITY

MAINE STATE PIER • PORTLAND, MAINE • TEL. 773-5608

A. EDWARD LANGLOIS, JR.
GENERAL MANAGER

December 26, 1963

Brigadier General P.C. Hyzer, USA
Division Engineer, New England Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham 54, Massachusetts

Dear General Hyzer:

This will acknowledge your recent letter relative to the Federal navigation project at New Harbor, Maine.

This is to advise that Mr. George Taylor, of the Department of Sea and Shore Fisheries, met with Mr. Philip Reilly and Selectman Edward Lewis on December 17th concerning this project at New Harbor.

Without making a definite legal commitment, New Harbor officials indicated the proposed improvement would meet the needs of local interests and the town is prepared to meet the requirements of local cooperation.

Plans are underway to raise the town's share of the project at the regular Town Meeting in March and we understand that the Town has notified the Corps to this effect.

State agencies concerned and interested in the development of our coastline feel that the proposed improvement would be of substantial assistance to the economy and welfare of the State of Maine.

We appreciate your continued interest in Public Works Improvement Projects in the State of Maine and offer the continued cooperation of the office of the Maine Port Authority and the State of Maine Department of Sea and Shore Fisheries.

Sincerely yours,

Edward Langlois, General Manager

EL/lg CC: George Taylor, Sea and Shore Fisheries

MUNICIPAL OFFICE

TOWN OF BRISTOL, MAINE

EDWARD B. LEWIS
CLIFFORD M. LEEMAN
DOUGLAS R. BENNER
SELECTMEN

LELAND S. POLAND
TREASURER & TAX COLLECTOR

CAROL A. YATES
TOWN CLERK & REGISTRAR OF VOTERS

May 24, 1964

U.S.Army Engineers
424 Trapelo Rd.
Waltham, Massachusetts

Dear Sirs:

Could you give me any information regarding the present status of the proposed dredging project at New Harbor, Maine, Town of Bristol.

At our regular town meeting the vote was favorable regarding the town's share of cost in this project.

Yours truly,

Edward B Lewis

Edward B. Lewis
First Selectman, Town of Bristol

STATE OF MAINE
OFFICE OF THE GOVERNOR
AUGUSTA

JOHN H. REED
GOVERNOR

July 24, 1964

Brigadier General P. C. Hyzer
Division Engineer
U. S. Corps of Engineers
424 Trapelo Road
Waltham 54, Massachusetts

Dear General Hyzer:

Thank you for your letter of July 15, regarding your project report on the proposed Federal navigation improvement plan for New Harbor, Maine.

The proposed project appears to be satisfactory and should be of substantial benefit to New Harbor's commercial fishing interests and to Maine's fishing industry. It should also relieve congested conditions in the harbor, thereby benefitting recreational boatmen in the area.

We are pleased to learn that this project is being given favorable consideration, and we trust it will receive final approval in the very near future.

It will be appreciated if you will continue to keep this office informed of subsequent actions taken in regard to this proposed improvement.

Sincerely yours,

John H. Reed

John H. Reed
Governor

JHR:am

NEW HARBOR, MAINE

APPENDIX C

ESTIMATES OF FIRST COST

1. The first costs are given below for the two plans of improvement. Federal construction consists of excavation of rock and ordinary material under the "Desired Plan", and the excavation of ordinary material only under the "Proposed Plan". The U. S. Coast Guard reports no additional navigation aids are contemplated.

2. Dredged quantities are computed in terms of in-plan measurement and provide for a project depth of 6 feet below MLW, plus an allowance of one foot of overdepth. Side slopes are computed on the basis of 1 vertical on 1 horizontal in rock, otherwise, 1 vertical on 3 horizontal. Unit prices are based on prices prevailing in January 1964 on the removal of material by bucket dredge and scow with disposal at sea. Suitable spoil disposal sites on land within economical pumping distance are not available due to the topography of the area surrounding the harbor.

3. The detailed estimates of first cost are as follows:

A. Desired Improvement (4.7 acres of additional anchorage)

Cost Account Number	Item		Estimated Cost (Jan. 1964)
09	Channels		
	(Dredge 6-ft. anchorage-Scow removal of 47,000 c.y. @$2.20)	$ 103,000	
	Contingencies 15%	16,000	
			$119,000
	(Rock Removal-1700 c.y. @$40/c.y.)	$ 68,000	
	Contingencies 15%	10,000	
			$ 78,000

Cost Account Number	Item	Estimated Cost (Jan. 1964)
52	Division Layouts	$ 3,000
	Total Contract Cost	$ 200,000
30	Engineering and Design	11,000
31	Supervision & Administration	19,000
	TOTAL Estimated Cost (C of E Project)	$ 230,000
	U.S. Coast Guard-Aids to Navigation	0
	TOTAL Estimated Project Cost-Federal and Non-Federal	$ 230,000
	Non-Federal Costs	
	Cash Contribution (8% of $230,000)	$ 19,000
	2 Public Landings @ $5,000 each	10,000
	Total Non-Federal Costs	$ 29,000
	Summary of Estimated Costs	
	Federal	
	Corps of Engineers (92%) ($230,000)	$ 211,000
	Coast Guard	0
	Total Federal Costs	$ 211,000
	Federal Statutory Limit	200,000
	Excess of Federal Limit	$ 11,000
	Non-Federal	
	Cash Contribution (8%)($230,000)	$ 19,000
	2 Public Landings	10,000
	Excess costs of Federal Limit	11,000
	Total Non-Federal Costs	$ 40,000
	Total Federal and Required Non-Federal Costs	$ 240,000

B. Proposed Improvement (3.6 acres of additional anchorage)

Cost Account Number	Item		Estimated Cost (Jan. 1964)
09	Channels (Dredge 6-ft. anchorage-scow removal of 33,000 c.y. @$2.60/c.y.)	$86,000	
	Contingencies 15%	13,000	
			$99,000
52	Division Layouts		3,000
	Total Contract Cost		$ 102,000
30	Engineering and Design		11,000
31	Supervision & Administration		12,000
	TOTAL Estimated Cost (C.ofE. Project)		$ 125,000
	U.S. Coast Guard(Aids to navigation)		0
	TOTAL Estimated Project Cost-Federal and Non-Federal)		$ 125,000
	Non-Federal Costs		
	Cash Contribution (6% of $125,000)		$ 8,000
	2 Public Landings @$5,000 each		10,000
	Total Non-Federal Costs		$ 18,000

Summary of Estimated Costs

Federal	
Corps of Engineers (94%)($125,000)	$ 117,000
U.S. Coast Guard	0
Total Federal Costs	$ 117,000

[illegible] an early notice will enable us to fully

Summary of Estimated Costs (cont'd)

Non-Federal

Cash Contribution (6%)($125,000)	$ 8,000
2 Public Landings	$ 10,000
Total Non-Federal Costs	$ 18,000

Total Federal and Required Non-Federal Costs $ 135,000

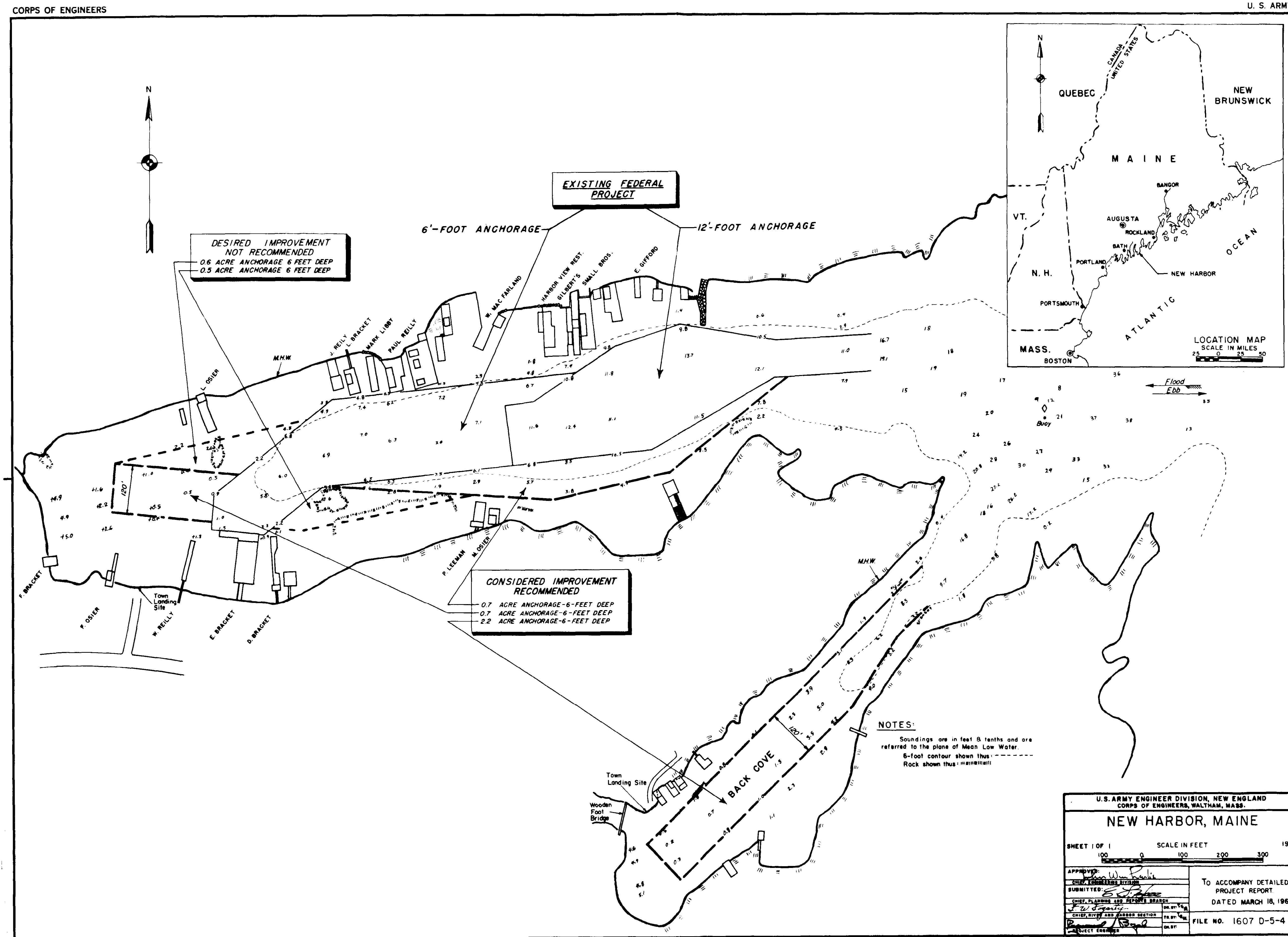
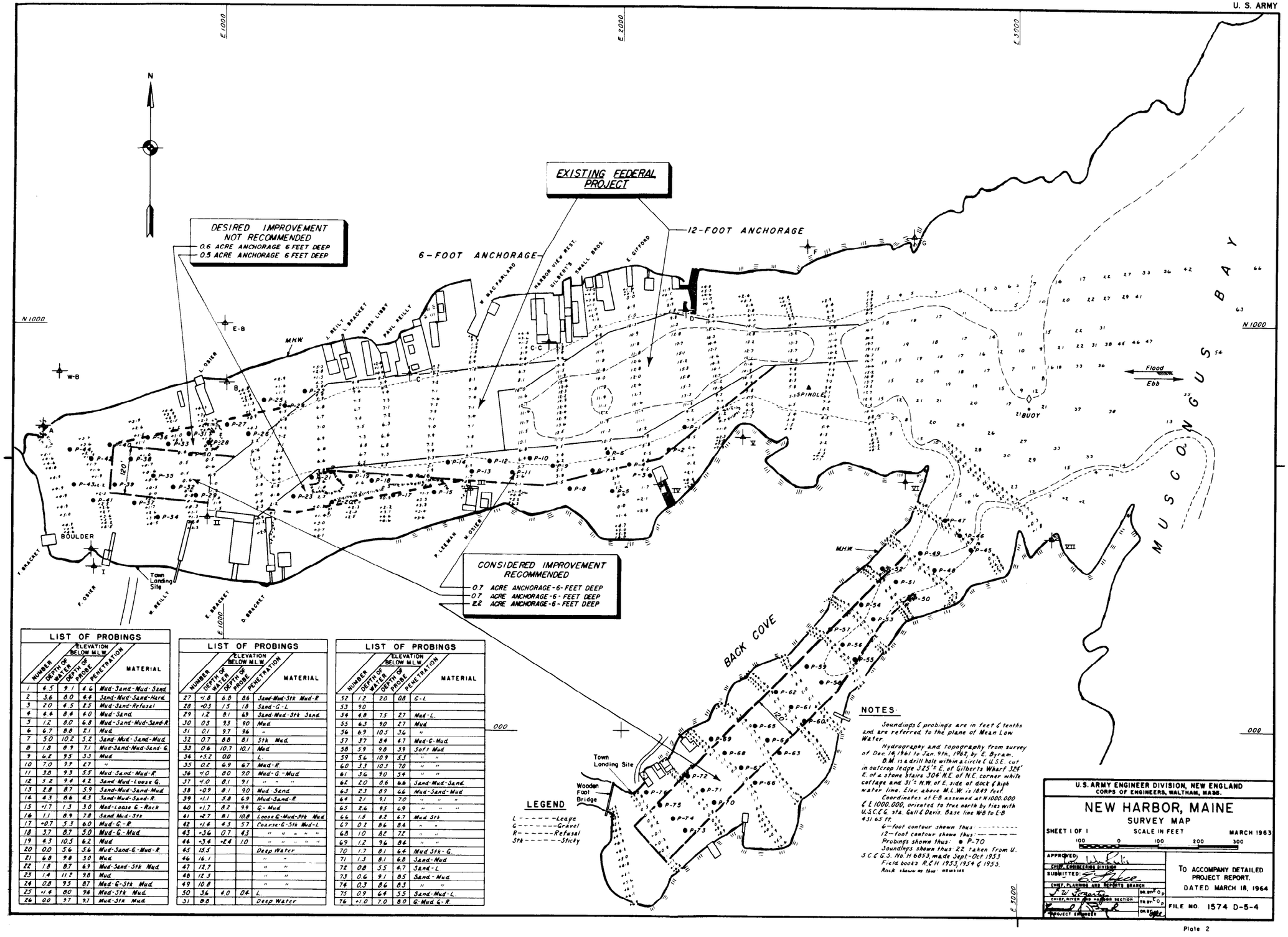

N
EXISTING FEDERAL PROJECT
6'-FOOT ANCHORAGE
12'-FOOT ANCHORAGE
DESIRED IMPROVEMENT NOT RECOMMENDED
0.6 ACRE ANCHORAGE 6 FEET DEEP
0.5 ACRE ANCHORAGE 6 FEET DEEP
CONSIDERED IMPROVEMENT RECOMMENDED
0.7 ACRE ANCHORAGE-6-FEET DEEP
0.7 ACRE ANCHORAGE-6-FEET DEEP
2.2 ACRE ANCHORAGE-6-FEET DEEP
M.H.W.
L. OSIER
J. REILY
L. BRACKET
MARK LIBBY
PAUL REILLY
W. MAC FARLAND
HARBOR VIEW REST.
GILBERT'S
SMALL BROS.
E. GIFFORD
F. BRACKET
F. OSIER
W. REILLY
E. BRACKET
D. BRACKET
P. LEEMAN
M. OSIER
Town Landing Site
Town Landing Site
Wooden Foot Bridge
BACK COVE
120'
120'
Buoy
Flood
Ebb
QUEBEC
CANADA
UNITED STATES
NEW BRUNSWICK
MAINE
VT.
N. H.
MASS.
BANGOR
AUGUSTA
ROCKLAND
BATH
PORTLAND
NEW HARBOR
PORTSMOUTH
BOSTON
ATLANTIC
OCEAN
LOCATION MAP
SCALE IN MILES
25 0 25 50
NOTES:
Soundings are in feet & tenths and are referred to the plane of Mean Low Water.
6-foot contour shown thus:
Rock shown thus:
U.S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS, WALTHAM, MASS.
NEW HARBOR, MAINE
SHEET 1 OF 1
SCALE IN FEET
1964
100 0 100 200 300
APPROVED:
CHIEF, ENGINEERING DIVISION
SUBMITTED:
CHIEF, PLANNING AND REPORTS BRANCH
CHIEF, RIVERS AND HARBOR SECTION
PROJECT ENGINEER
DR. BY:
TR. BY:
CK. BY:
To ACCOMPANY DETAILED PROJECT REPORT
DATED MARCH 18, 1964
FILE NO. 1607 D-5-4

Plate 1

CORPS OF ENGINEERS

U. S. ARMY



LIST OF PROBINGS

NUMBER	ELEVATION BELOW M.L.W. DEPTH OF WATER	ELEVATION BELOW M.L.W. DEPTH OF PROBE	PENETRATION	MATERIAL
1	6.5	9.1	4.6	Mud-Sand-Mud-Sand
2	3.6	8.0	6.4	Sand-Mud-Sand-Hard
3	2.0	4.5	2.5	Mud-Sand-Refusal
4	6.4	8.4	4.0	Mud-Sand
5	1.2	8.0	6.8	Mud-Sand-Mud-Sand-R
6	6.7	8.8	2.1	Mud
7	5.0	10.2	5.2	Sand-Mud-Sand-Mud
8	1.8	8.9	7.1	Mud-Sand-Mud-Sand-G.
9	6.2	9.5	3.3	Mud
10	7.0	9.7	2.7	"
11	3.0	9.3	5.5	Mud-Sand-Mud-R
12	5.2	9.4	4.2	Sand-Mud-Loose G.
13	2.8	8.7	5.9	Sand-Mud-Sand-Mud
14	4.3	8.6	4.3	Sand-Mud-Sand-R
15	+1.7	1.3	3.0	Mud-Loose G.-Rock
16	1.1	8.9	7.8	Sand Mud-Stk
17	+0.7	5.3	6.0	Mud-G.-R
18	3.7	8.7	5.0	Mud-G.-Mud
19	8.3	10.5	6.2	Mud
20	0.0	5.6	5.6	Mud-Sand-G.-Mud-R.
21	6.8	9.8	3.0	Mud
22	1.8	8.7	6.9	Mud-Sand-Stk Mud
23	1.4	11.2	9.8	Mud
24	0.8	9.5	8.7	Mud-G-Stk Mud
25	+1.4	8.0	9.6	Mud-Stk Mud
26	0.0	9.7	9.1	Mud-Stk Mud

LIST OF PROBINGS

NUMBER	ELEVATION BELOW M.L.W. DEPTH OF WATER	ELEVATION BELOW M.L.W. DEPTH OF PROBE	PENETRATION	MATERIAL
27	+1.8	6.8	8.6	Sand-Mud-Stk Mud-R
28	+0.3	1.5	1.8	Sand-G-L
29	1.2	8.1	6.9	Sand-Mud-Stk Sand
30	0.3	9.3	9.0	Mud
31	0.1	9.7	9.6	"
32	0.7	8.8	8.1	Stk Mud
33	0.6	10.7	10.1	Mud
34	+3.2	0.0		L
35	0.2	6.9	6.7	Mud-R
36	+1.0	8.0	9.0	Mud-G.-Mud
37	+1.0	8.1	9.1	" " "
38	-0.9	8.1	9.0	Mud-Sand
39	-1.1	5.8	6.9	Mud-Sand-R
40	+1.7	8.2	9.9	G-Mud
41	+2.7	8.1	10.8	Loose G-Mud-Stk Mud
42	+1.4	4.3	5.7	Coarse-G-Stk Mud-L
43	+3.6	0.7	4.3	" " " " "
44	+3.4	+2.4	1.0	" " " "
45	15.5			Deep Water
46	16.1			" "
47	12.7			" "
48	12.3			" "
49	10.8			" "
50	3.6	4.0	0.4	L
51	0.0			Deep Water

LIST OF PROBINGS

NUMBER	ELEVATION BELOW M.L.W. DEPTH OF WATER	ELEVATION BELOW M.L.W. DEPTH OF PROBE	PENETRATION	MATERIAL
52	1.2	2.0	0.8	G-L
53	9.0			
54	4.8	7.5	2.7	Mud-L
55	6.3	9.0	2.7	Mud
56	6.9	10.5	3.6	"
57	3.7	8.4	4.7	Mud-G-Mud
58	5.9	9.8	3.9	Soft Mud
59	5.6	10.9	5.3	" "
60	3.3	10.3	7.0	" "
61	3.6	9.0	5.4	" "
62	2.0	0.6	6.6	Sand-Mud-Sand
63	2.3	8.9	6.6	Mud-Sand-Mud
64	2.1	9.1	7.0	" " "
65	2.6	9.5	6.9	" " "
66	1.5	8.2	6.7	Mud Stk
67	0.2	8.6	8.4	" "
68	1.0	8.2	7.2	" "
69	1.2	9.6	8.4	" "
70	1.7	8.1	6.4	Mud Stk-G.
71	1.3	8.1	6.8	Sand-Mud
72	0.8	5.5	4.7	Sand-L
73	0.6	9.1	8.5	Sand-Mud
74	0.3	8.6	8.3	" "
75	0.9	6.4	5.5	Sand-Mud-L
76	+1.0	7.0	8.0	G-Mud G-R

NOTES

Soundings & probings are in feet & tenths and are referred to the plane of Mean Low Water.

Hydrography and topography from survey of Dec. 14, 1961 to Jan. 9th, 1962, by E. Byram.

B.M. is a drill hole within a circle & U.S.E. cut in outcrop ledge 325'± E. of Gilberts Wharf 324' E. of a stone stairs 304' N.E. of N.E. corner white cottage and 31'± N.W. of E. side of dock & high water line. Elev. above M.L.W. is 18.49 feet.

Coordinates at E-B assumed at N 1000.000 & E 1000.000, oriented to true north by ties with U.S.C.& G. sta. Gull & Davis. Base line W-B to E-B 431.65 ft.

6-foot contour shown thus ---------

12-foot contour shown thus — — — —

Probings shown thus: ● P-70

Soundings shown thus: 2.2 taken from U.S.C.& G.S. No. H 6053, made Sept.-Oct. 1953.

Field books R.C.H. 1953, 1954 & 1955.

Rock shown as thus: [illegible]

U.S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS, WALTHAM, MASS.

NEW HARBOR, MAINE
SURVEY MAP

SHEET 1 OF 1 — SCALE IN FEET 100 0 100 200 300 — MARCH 1963

APPROVED: CHIEF, ENGINEERING DIVISION

SUBMITTED: CHIEF, PLANNING AND REPORTS BRANCH

CHIEF, RIVER AND HARBOR SECTION

PROJECT ENGINEER

TO ACCOMPANY DETAILED PROJECT REPORT.
DATED MARCH 18, 1964

FILE NO. 1574 D-5-4

Plate 2